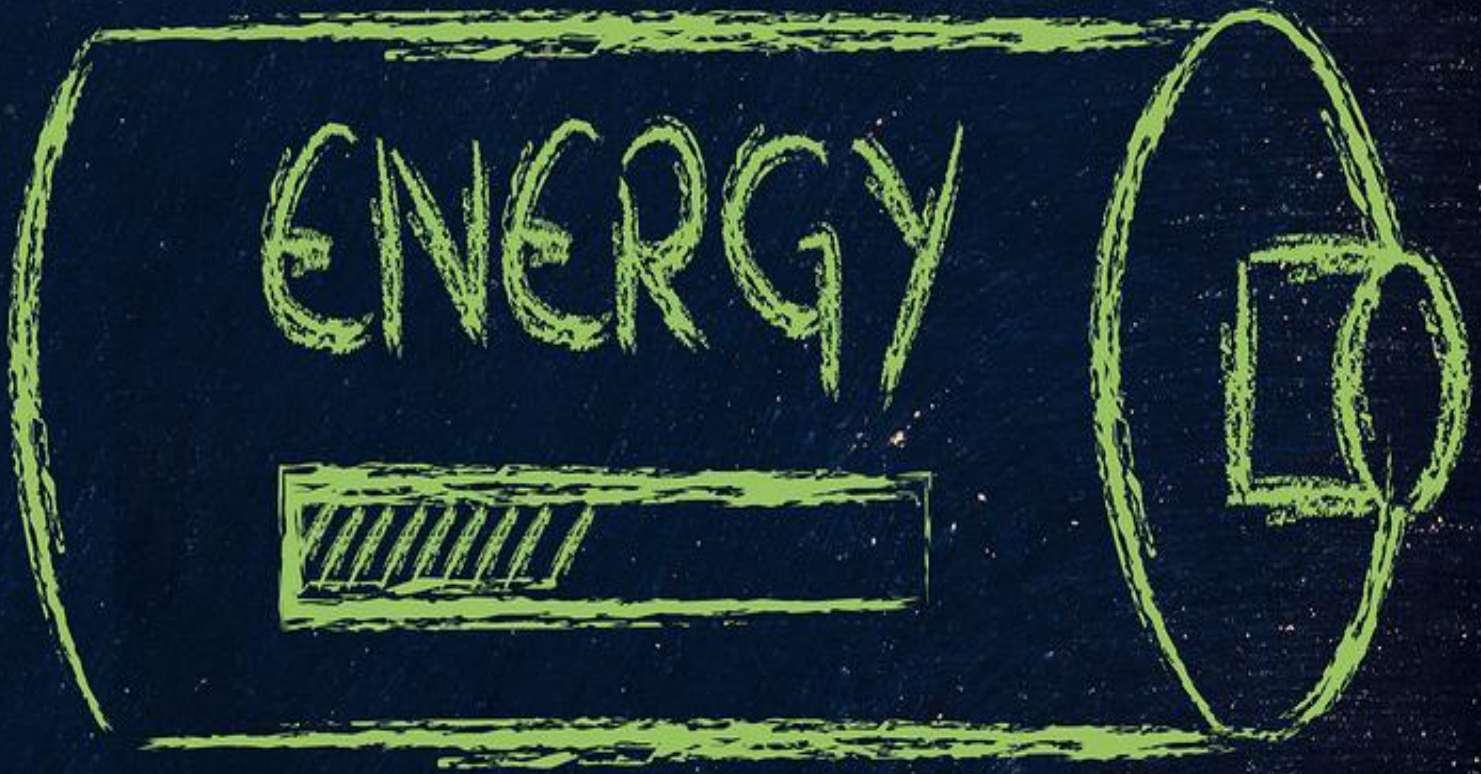
Energy Warm Ups 11 Weeks



WARM UP-1 LAB SAFETY/BATTERY LAB

MONDAY

What is the #1 Lab Safety Equipment that you should wear?

a. mask
b. apron
c. goggles
d. glasses

TUESDAY

What should you do if something spills in the lab?

a. Tell the teacher immediately.
b. Clean it up immediately.
c. Leave it for the next class to clean up.
d. Just cover it with a paper towel.

WEDNESDAY

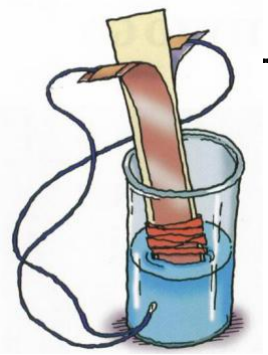
What type of energy is in a battery?
What can a battery do?

_____

_____

_____

THURSDAY



What types of energy transfers occurred in our battery lab?

_____ → _____ → _____

Make Your Own!

Draw a scenario and identify the type of energy transformation involved.

WARM UP-2 FORMS/ENERGY TRANSFORMATIONS

MONDAY

What is the Law of Conservation of Energy?

a. Energy can disappear.
b. Energy can neither be created or destroyed it only changes form.
c. Energy can be created.
d. Energy can be destroyed.

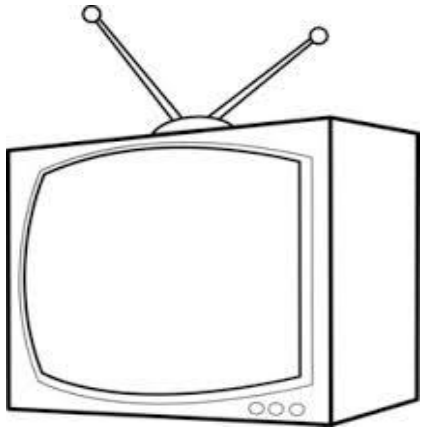
TUESDAY

Which type of energy has to do with the energy an object has due to the motion of its particles?

a. Solar Energy
b. Thermal/Heat Energy
c. Electrical Energy
d. Sound Energy

WEDNESDAY

What types of energy transfers occur within the television?

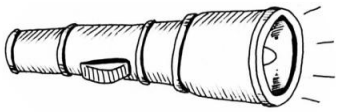


_____ → _____

or

_____ → _____

THURSDAY



What types of energy transfers occur within a flashlight?

_____ → _____ → _____

Make Your Own!

Draw a scenario and identify the type of energy transformation involved.

WARM UP-3

WARM UP- MONDAY

Energy A	Energy stores within a particle (measured by the particle's temperature).
Energy B	Energy generated by the sun.
Energy C	Energy released when particles react to form a new substance.
Energy D	Energy created by the motion and position of an object.
Energy E	Energy that flows through a circuit.

1. The type of energy described by Energy C is which type of energy?

a. electrical energy b. chemical energy

c. mechanical energy d. heat energy

2. Billy is clapping his hands. Every time he moves his hands together he is expending mechanical energy. This type of energy is described by which item on the above list?

a. Energy C b. Energy B

c. Energy D d. Energy A

1

WARM UP- TUESDAY

Energy A	Energy stores within a particle (measured by the particle's temperature).
Energy B	Energy generated by the sun.
Energy C	Energy released when particles react to form a new substance.
Energy D	Energy created by the motion and position of an object.
Energy E	Energy that flows through a circuit.

1. Energy B describes solar energy. Which of the following is the best example of solar energy being used?

a. driving a nail into a board with a hammer

b. starting a fire with a magnifying glass instead of matches

c. causing vinegar to fizz by adding baking soda

d. using a vacuum cleaner that is plugged into the wall

2

WARM UP- WED.

1. Potential energy is transformed into kinetic energy in which of the following scenarios?

a. Scenario B b. Scenario D

c. Scenario C d. Scenario E

2. By plugging in the stove in scenario D, a person is hoping to create heat energy from what?

a. electrical energy b. chemical energy

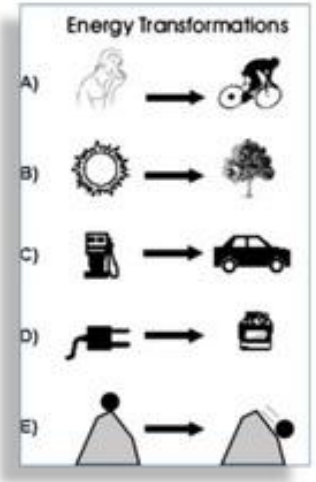
c. solar energy d. mechanical energy

3. In all of the energy transformations shown above, the total amount of energy:

a. disappeared when it transformed into another type of energy.

b. decreased when it transformed into another type of energy.

c. remained the same when it transformed into another type of energy.



3

WARM UP- THURSDAY

1. Scenario B shows a plant using photosynthesis to create its own food. This involves which of the following energy transformations?

a. solar energy to kinetic energy

b. solar energy to mechanical energy

c. solar energy to chemical energy

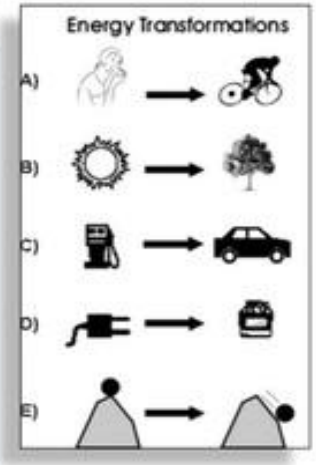
2. Scenario A above shows a man eating a hot dog so that he has enough energy to complete a bike race. By doing this, he is converting chemical energy to mechanical energy. This same transformation can be seen in which other scenario?

a. Scenario B

b. Scenario C

c. Scenario D

d. Scenario E



4

WARM UP-4

WARM UP- MONDAY

1. **A simple motor can create electricity by using the properties of magnets. The purpose of this motor is to transform the electrical energy into what?**

a. mechanical energy b. solar energy

c. potential energy d. chemical energy

2. **The picture above shows an electrical wire wrapped around an iron core. This results in which of the following?**

a. a bar magnet. b. a permanent magnet.

c. an electromagnet. d. a molecular magnet.

3. **The picture above shows a coil of wire wrapped around an iron core. This combination creates electricity when it is quickly rotated around a magnet. This device is known by what name?**

a. an insulator b. a conductor

c. a generator d. a transmitter

5

TUESDAY

WARM UP-

1. **When it becomes part of an electrical circuit, which of the following items demonstrates how electricity can be converted into mechanical motion?**

a. Television b. ceiling fan

c. Fireplace d. telephone

2. **The temperature inside the room is about 20 degrees Celsius. However, it is snowing outside and the temperature is below 0 degrees Celsius. The reason why the people inside the house are able to stay warm is because they have transformed chemical energy into**

a. kinetic energy b. thermal energy

c. mechanical energy d. chemical energy

A Typical Family Room

6

WARM UP- WED.

1. **When it becomes part of an electrical circuit, which of the following items has the ability to transform electricity into sound?**

a. Television b. ceiling fan

c. light bulb d. dog whistle

2. **The light bulb in the above room turns on by the flick of a switch. Which of the following explains why this happens?**

a. the light bulb is heated until it starts to give off light

b. the light bulb is connected to a circuit that allows electrical energy to flow through it

c. the light bulb is the site of a chemical reaction that produces light

d. the light bulb is rotated so that mechanical energy is created

A Typical Family Room

7

WARM UP- THURSDAY

1. **When a force causes a change in the position of an object (like in Scenarios B and C), it is true that which of the following has also taken place?**

a. energy has been transferred

b. energy has been created

c. energy has been taken away

d. energy has stored

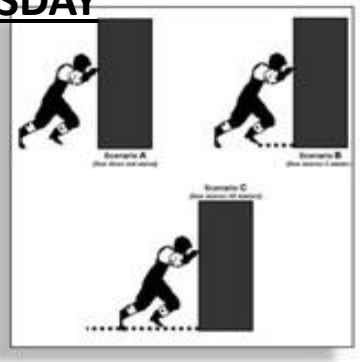
2. **In which of the above scenarios does the man do the most mechanical work (defined as force exerted over a distance)?**

a. Scenario C

b. The man does the same amount of work in each scenario

c. Scenario A

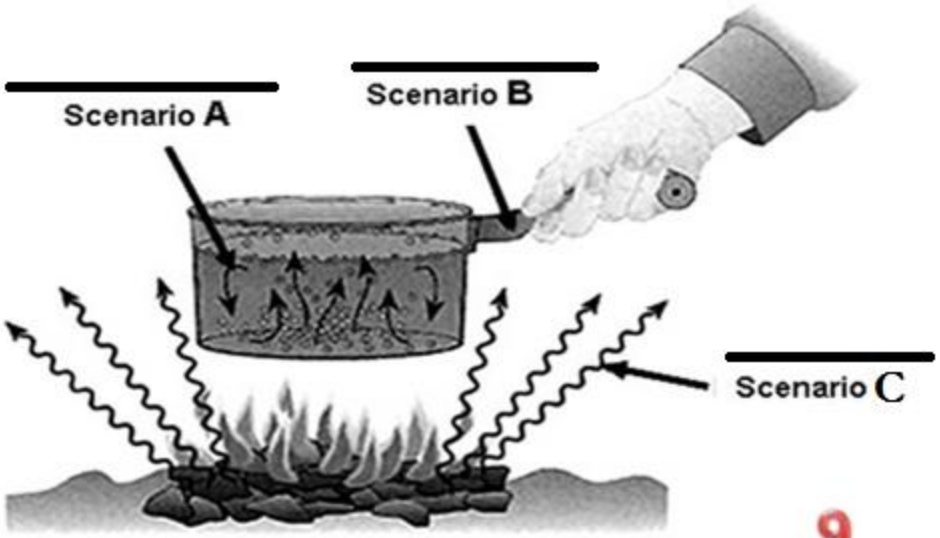
d. Scenario B



8

WARM UP-5

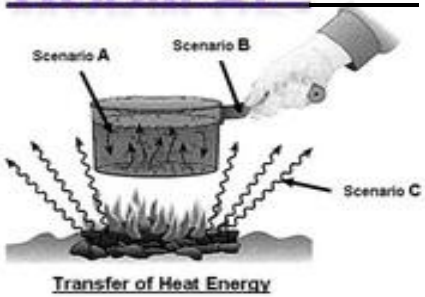
MONDAY- Label each scenario



Transfer of Heat Energy

9

WARM UP-WED.



Transfer of Heat Energy

1. **If the man in the above picture touched the side of the hot pot with his cold hand, the heat energy would flow in which direction?**

a. the energy would transfer from the hot pot to the man's cold hand

b. the heat energy would not transfer

c. the energy would transfer from the man's cold hand to the hot pot

d. the heat energy would transfer to whichever object had the largest mass

2. **The type of transfer shown by Scenario B is known as conduction. In this situation, the man's hand gets hot because:**

a. the handle of the pot is acting as an insulator.

b. he is holding his hand close to the fire.

c. he is holding onto the hot handle of the pot.

d. the water is boiling and blowing hot steam onto his hand.

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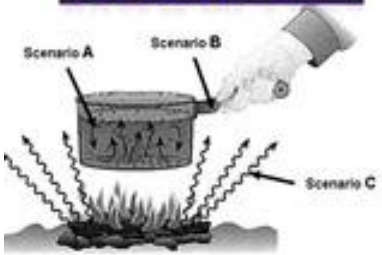
WARM UP- TUESDAY



Transfer of Heat Energy

1. **Scenario A shows that water can be heated to a boil when it is held over a fire. This is an example of which type of heat transfer?**

a. Insulation b. radiation

c. Conduction d. Convection

2. **The squiggly lines coming from the fire (Scenario C) are used to represent radiation. Which of the following is the best way to describe the term "radiation" in heat transfer?**

a. the transfer of heat through the direct contact of heated particles

b. the transfer of heat from an area of lower temperature to an area of higher temperature

c. the transfer of heat without the help of heated particles

d. the transfer of heat through the movement of heated particles, but without direct contact

10

THURSDAY

WARM UP-

1. **All of the tools above rely on simple machines to complete a task. These simple machines do which of the following?**

a. reduce the distance that an object needs to be moved

b. reduce the force needed to move an object over a distance

c. reduce the amount of work needed to move an object over a distance

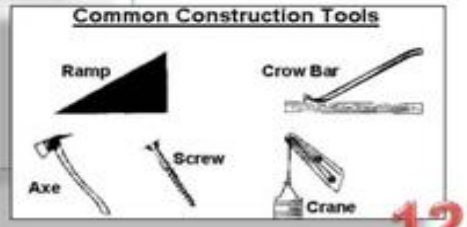
2. **If an object is too heavy to move up a ramp, the best way to fix the problem?**

a. increase the length of the ramp

b. increase the slope of the ramp

c. increase the friction on the ramp

d. increase the elevation of the ramp



12

WARM UP-6

WARM UP- MONDAY-

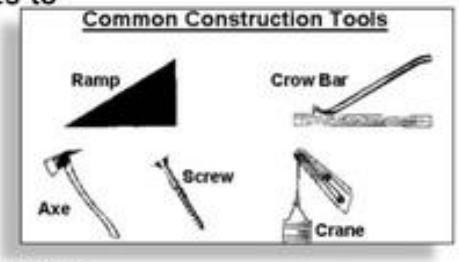
1. When lifting a heavy object, the crane relies on which of the following simple machines to make the job easier?

a. a lever

b. an inclined plane

c. a pulley

d. a wedge



2. Which of the above tools relies on a lever to reduce the amount of effort needed to complete a task?

a. the axe b. the crane

c. the screw d. the crow bar

13

WARM UP- TUESDAY

1. Which of the following simple machines is used to help the can-opener revolve around the top of the can while opening it?

a. lever b. inclined plane

c. wheel and axle d. pulley

2. Because it uses several simple machines to complete its task, the can opener can be referred to as what?

a. advanced machine

b. combination machine

c. utility machine

d. compound machine

3. To puncture the can, the can-opener relies on a sharp wedge. This wedge is a variation of which simple machine?

a. wheel and axle b. inclined plane

c. lever d. pulley

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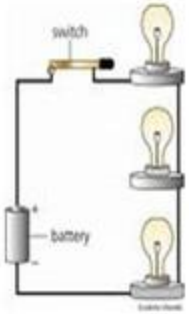
WARM UP- WED.

Copy and label the diagrams into your notebooks.

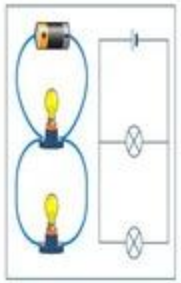
Series Circuit



Cool Stuff:

Stronger current

Parallel Circuit

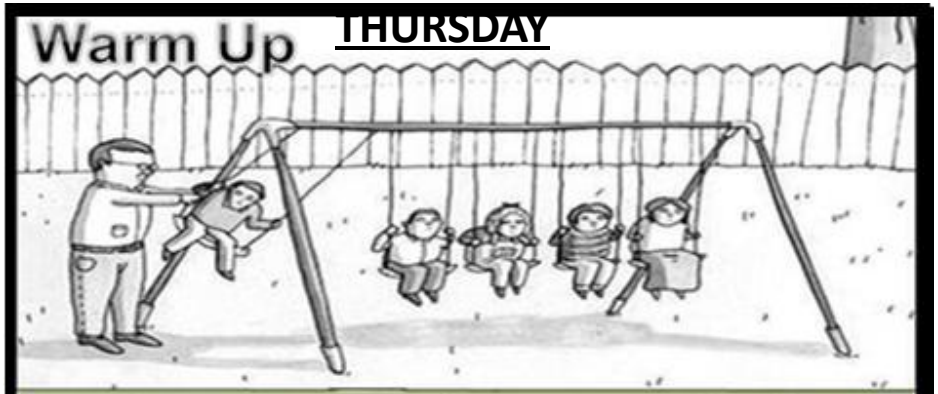


Cool Stuff:

Multiple pathways

15

Warm Up THURSDAY



1. What energy transformations will take place once the science teacher lets the scared boy go? ☺ LOL! _____

2. What law is this displaying? _____

16

WARM UP-7

Warm Up MONDAY

17

1. What energy transformations took place as the children made this Snoopy snow masterpiece? _____
2. What kind of energy is associated with the motion of the particles of a substance? *hint it can increase and decrease _____

Warm Up TUESDAY

What are the six simple machines and give an example and a sketch of each.

Six Simple Machines	Example	Drawing/Sketch
1.		
2.		
3.		
4.		
5.		
6.		

18

Warm Up WED.

What are the six simple machines and give an example and a sketch of each.

1. 
2. 
3. 

A.	Inclined Plane
B.	Wedge
C.	Pulley
D.	Wheel & Axle
E.	Screw
F.	Lever

4. 
5. 
6. 

19

Warm Up THURSDAY

Do You Remember?

- Forms of Energy? _____
- Energy Transformations? _____
- Simple Machines? _____
- Conduction, Convection, Radiation? _____
- Electric Motors? _____
- Generators? _____

Write one thing you remember.

20

WARM UP-8

Warm Up

MONDAY

What are these items and which energy transformations do they represent? (Each picture has two answers)

1. 

2. 

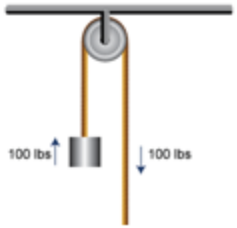
A. Generator
B. Electrical → Mechanical
C. Electric Motor
D. Mechanical → Electrical

21

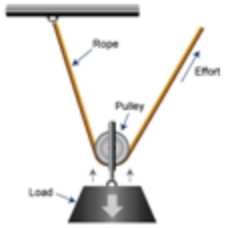
TUESDAY

How is a pulley similar to a wheel and axle?

What is the difference between a single fixed pulley and a single movable pulley?



22



WED.

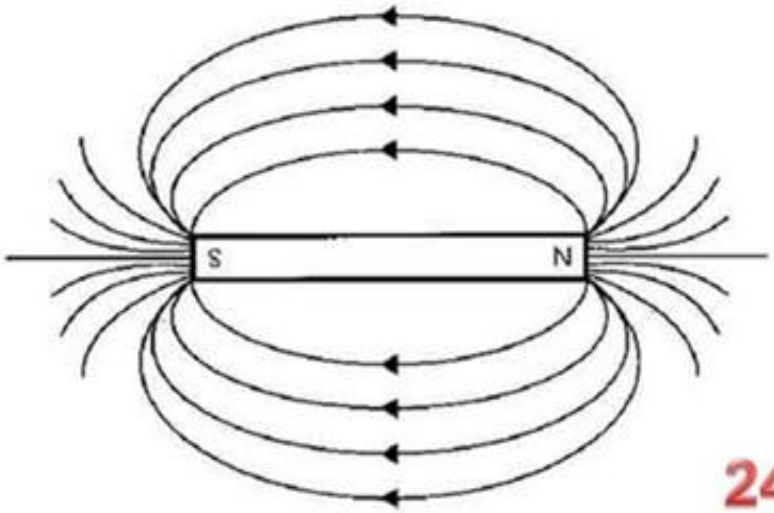
What is this? _____

What does it do? _____

23

THURSDAY

What is this? _____



24

WARM UP-9

MONDAY

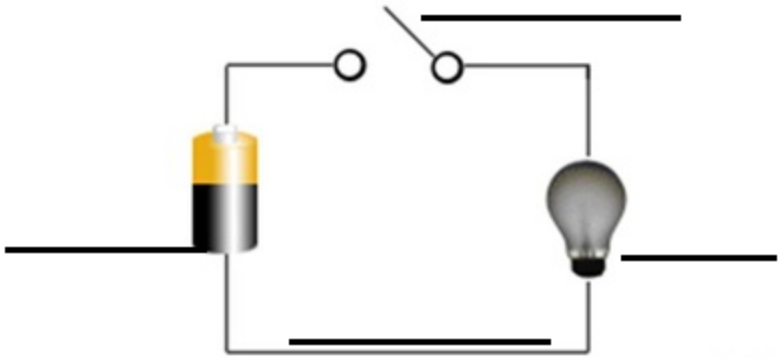
What do you know about this?

_____

25

TUESDAY

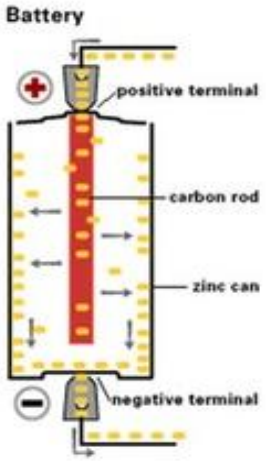
Label the 4 parts of a circuit.

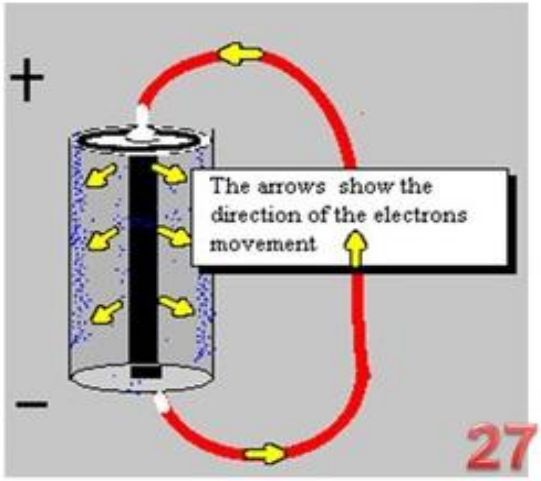


26

WED.

What is this illustrating? _____





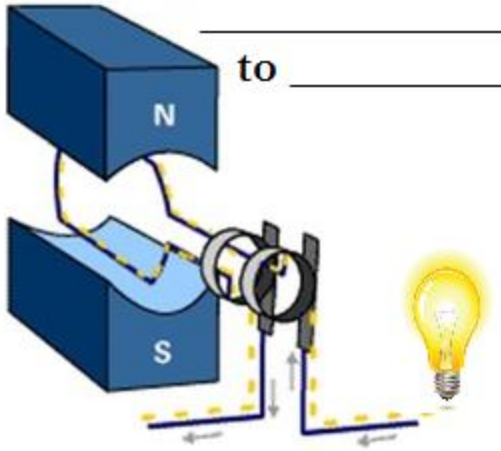
27

THURSDAY

What is this illustrating? _____

What is the energy transformation?

_____ to _____



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WARM UP-10

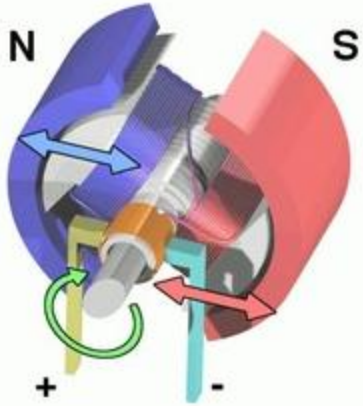
MONDAY

What is this illustrating? _____

What is the energy transformation?

_____

_____ to _____



29

TUESDAY

What is happening in this picture?

_____

_____

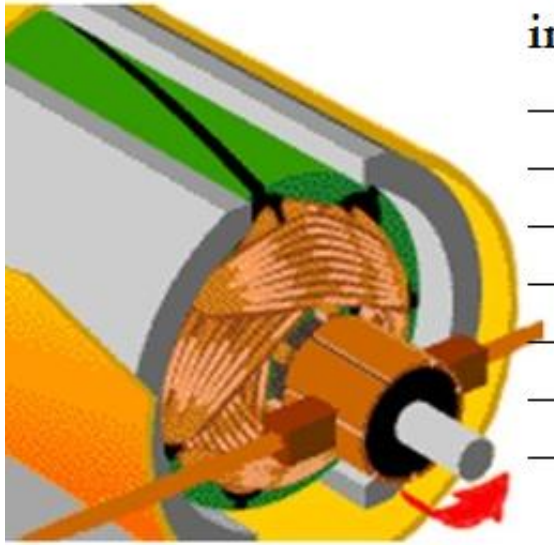
_____

_____

_____

_____

_____

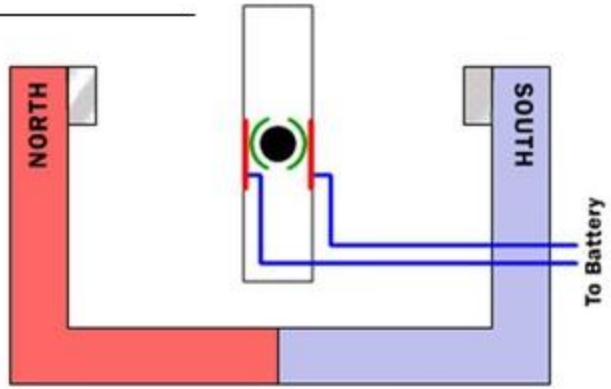


30

WED.

What is this demonstrating?

_____

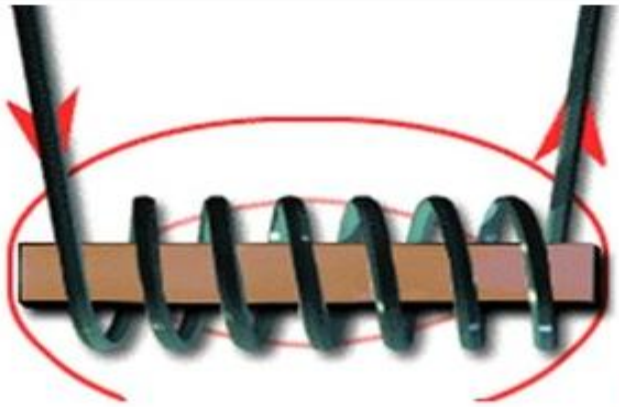


31

THURSDAY

What does winding this electromagnet more times around the iron core do?

_____

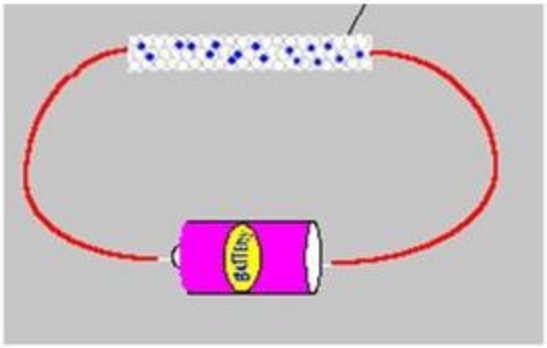


32

WARM UP-11

MONDAY

What are moving through this magnified part of the wire? _____



33

WED.

What Did I Learn About Inclined Planes?

- Less effort force (EF) required to pull a load if the ramp is lower (less friction & gravity)
- Ramps are used to reduce effort force, but add distance

less EF, longer distance

**Turn to a partner and repeat these phrases.

35

WARM UP- TUESDAY

1. HOW DOES A GENERATOR WORK? EXPLAIN.

2. HOW DOES A SIMPLE MOTOR WORK? EXPLAIN.

34

THURSDAY

Pulleys

- Make work easier in 2 ways:
- Change the direction of the EF
- Change the EF needed
- 2 or more pulleys reduces the EF needed & controls the direction of the EF
- 1 fixed pulley- same EF, different direction

Ex: flag poles, ships' masts

36

**Turn to a partner and repeat these phrases.